Emergency Management of Non-Traumatic Intracerebral Hemorrhage (ICH)

Adults; Intermountain Canyons, Desert, and Peaks Regions

This Care Process Model was developed by the Neurosciences Clinical Program to provide recommendations for the emergency management of adult patients presenting with non-traumatic intraparenchymal hemorrhage with or without intraventricular or subarachnoid hemorrhage.

Key Points

ICH should be considered in the setting of new or severe headache, focal neurological deficits, sudden change in level of consciousness (LOC) without known cause.

Confirmation of ICH via non-contrast heat CT imaging. This defines size, location, and type of hemorrhage.

Develop facility ICH Protocols. Each facility should implement a clearly defined ICH protocol that outlines activation procedures—such as a Code ICH page via phone or overhead—and guides the coordinated response of all involved teams, including the ED, neurology/neurosurgery, pharmacy, and transfer/disposition staff. The protocol must identify ICH as the condition being managed and ensure each team follows timely, evidence-based actions appropriate to their role.

Immediate Interventions. Evidence supports aggressive medical management initiated as soon as possible. Summary below:

- **Blood pressure:** Goal-directed therapy protocol.
- **Anticoagulation reversal:** Intracerebral hemorrhage in the setting of anticoagulation is a life-threatening emergency. Evidence supports rapid reversal. See *Antithrombotic Bleeding Reversal Guideline*.
- **Medical management**: Optimal outcomes are achieved through bundling best care in standardized order sets.
- **Surgical evaluation**: High-risk patients should be evaluated for surgical options.

Key Supporting Evidence

2022 Guideline for the Management of Patients With Spontaneous Intracerebral Hemorrhage: A Guideline From the American Heart Association/American Stroke Association. Stroke. 2022;53(7):e282-e361.

Treatment for intracerebral hemorrhage: Dawn of a new era. Int J Stroke. 2024;19(5):482-489.

Code ICH: A Call to Action. *Stroke*. 2024;55(2):494-505.

What's Inside?

Measurement: Key Drivers

- Time from door to oral anticoagulant (OAC) reversal
- Time from door to order set
- Time from CT scout to order set
- Time from CT scout to OAC reversal
- Time from ED arrival to departure
- Hemorrhagic Stroke order set usage

Caregiver Resources

- NIH Stroke Scale (NIHSS) English/Spanish
- Emergency Management of Acute Ischemic Stroke (AIS) in Adults CPM
- Traumatic Intracerebral Hemorrhage (ICH) in Adults (mBIG)
- Neuro Stroke Dashboard
- Intermountain Stroke Services

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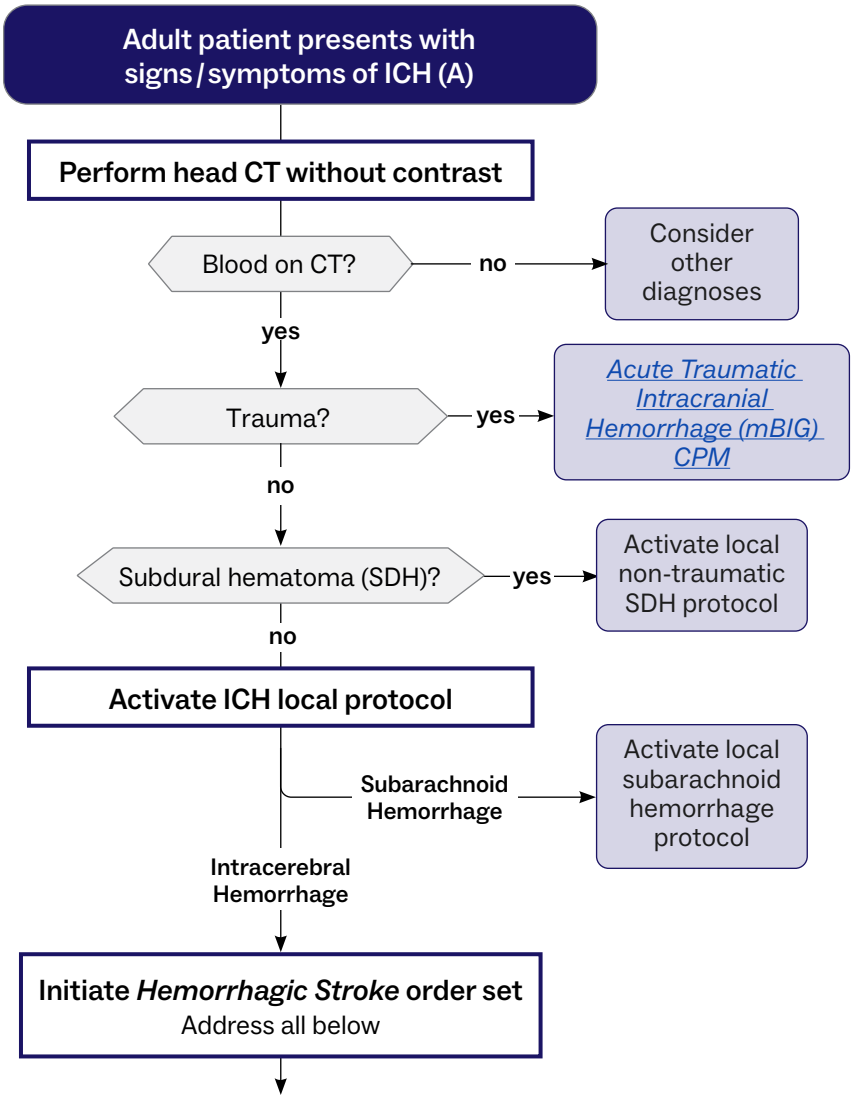

(A) Signs and Symptoms of ICH

- New or severe headache
- Focal neurological deficits
- Sudden change in level of consciousness without known cause

(B) Antihypertensives

- IV push medications while awaiting IV drip
  - Labetalol 10 mg IV push q15 min. Avoid if HR <60 bpm.
  - Hydralazine 10 mg q15 min. Avoid if HR >110 bpm.
- IV drip medications (arterial monitoring preferred)
  - Clevidipine 1 mg/hr and titrate up 1–2 mg/hr as soon as every 2 min. (Max 21 mg/hr).
  - Nicardipine 5 mg/hr , titrate up 2.5 mg/hr every 5–15 min (Max 15 mg/hr).

(C) Anticoagulation Reversal

See *Antithrombotic Bleeding Reversal Guideline* for detailed dosing.

Anticoagulant	Reversal agent
Warfarin (Coumadin™)	4-factor PCC (KCENTRA®) Dosing based on weight and INR
Apixaban (Eliquis®) Rivaroxaban (Xarelto®) Edoxaban (Savaysa®)	4-factor PCC (KCENTRA®) 50 units/kg IV X 1, max 5000 units
Dabigatran (Pradaxa®)	Idarucizumab (Praxbind®) Alternative: FEIBA® (preferred) or 4-factor PCC (KCENTRA®)
Enoxaparin (Lovenox®)	Protamine
Heparin	Protamine

Control High Blood Pressure (If SBP >150 mmHg)	• If SBP >220 mm Hg, first hour goal is 150–170 mm Hg, then lowering to 130–150 mm Hg. • If SBP >150 mm Hg but <220 mm Hg, goal is 130–150 mm Hg. • If spontaneous SBP <130, no intervention is necessary. • Steady, continuous SBP control is optimal and IV drips are preferred. See **(B)** for details. • Bridging from IV push to IV drip may be beneficial.
Anticoagulation Reversal	• ICH is considered life-threatening; reversal of DOACs, warfarin, and heparin is indicated. See **(C)** for summary and *Antithrombotic Bleeding Reversal Guideline* for details. • Document anticoagulant use (time last administered and dose).
Medical Management	• Frequent vital signs and neuro exams • Keep SPO2 >94% and temperature <37.5°C • Head of bed 30 degrees • PT, INR, and CBC • Avoid IV hypotonic fluids • Keep patient NPO • Two large bore IVs (AC preferred) • Target blood glucose 110–140 mg/dL (if diabetic 110–180 mg/dL) • Document (ICH score, Hunt/Hess score, neuro exam) • Discuss with family regarding goals of care and review advanced directives
Consider neurosurgical evaluation if:	• Cerebellar ICH >15 mL with declining neuro status, brainstem compression, or hydrocephalus • Supratentorial ICH >20 mL and GCS 5–12 • Large Intraventricular Hemorrhage (IVH) + impaired LOC

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4. Li Q, Yakhkind A, Alexandrov AW, et al. Code ICH: A Call to Action. *Stroke.* 2024;55(2):494-505.
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This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every provider every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although providers are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base. Send feedback to Intermountain's Neurosciences Clinical Program

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